

RCCS Range Computation & Control System



The Range Computation and Control System (RCCS) is an automated data visualization tool in support of Sea Power 21. RCCS provides the Atlantic Test Ranges (ATR) range mission controllers with real-time aircraft Time Space Position Information (TSPI) data from various tracking sources and telemetry data from the Range Telemetry Processing System (RTPS). Range TSPI data is used by both range controllers and range safety officers to safely conduct aircraft flight test at ATR in the Atlantic Warning Areas.

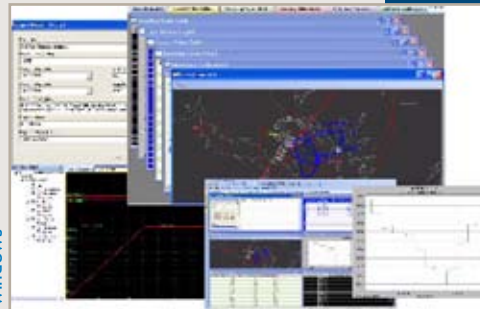
capabilities

The new RCCS provides a Least Squares Fit filter (used in the slaving of various tracking instruments to the test vehicles), inner-track calculations, engineering unit (EU) conversion, time correlation of data, data parameterization, 3-D map, Outside Continental U.S., or OCONUS maps, whole-world coverage, DTED map format support, plus many others.

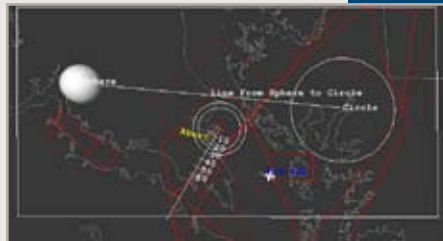
In addition to providing aircraft test project teams with parameter data for flight test evaluations, RCCS provides slaving data (pointing vectors) back to the various tracking instruments via the Advanced Range Operational Network (ARON) network as required. This slaving data provides the tracking instruments with location information that tells the instrument where to look to acquire the aircraft under test.

Safety officers use the data displayed by the RCCS computers to monitor safety-of-flight parameters, to keep the test area clear and abort test operations in the event of test area intrusion or other hazards as they appear.

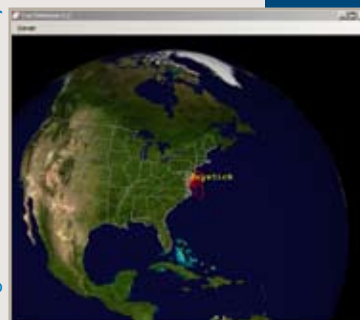
RCCS features cascading or tiled windows



Full 3-D Map includes user-defined objects and features



World-view of 3-D map - Multiple ranges can be viewed simultaneously



for more information

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RCCS Range Computation & Control System

capabilities

Windows, PC-based Architecture

- Can run on a single station, or multiple PCs
- ATR has six consoles, each consisting of one computational server and four data display PCs

Ethernet Network

- Uses new RDDS Applications Program Interface (API) and Gigabit Ethernet (GigE) network
- TCP for guaranteed delivery of event marking

Platform-Independent Server

- Can be hosted on Windows, Unix or Linux
- Can be run on one PC/laptop if required

Independent Common Map

- Uses ATR common Map
- Can be run with or without Map function

Functionality Includes:

- Aircraft ground control with 3-D aircraft models
- Assignment of tracking instruments
- Handoff from search to tracking radar
- Display of aircraft and Identification Friend or Foe (IFF) tracks
- Time history trails
- DTED maps with restricted airspace boundaries
- Landmarks
- User-generated geometric symbols and lines
- User-defined graphs, charts and reports

products to customers

Real-time aircraft track and control

Use/control of restricted airspace

Safety monitoring

- Dive plot display
- Pull up queue display
- Run-in line display
- Bin-fill display

Weapon Separation

- Ballistics
- Bomb scoring

Post Flight Data

- Electronic media
- Formats – ASCII & Raw
- Reports

RCCS History

RCCS I

1981 – 1994

The original RCCS program, known as the Mission Control Data System (MCDS) was developed on Gould 32/77 and Adage 4185 computers. The Gould was used as the computational function (CF) and the Adage provided vector graphical functions (DF) with up to four different colors.

RCCS II

1994 – 2006

The RCCS II system was written in ADA-83 on an SGI Unix platform and provided the user with a robust graphical user interface and function control panels. The CF was hosted on multi-processor SGI Challenges while the DF ran on SGI Indigo computers providing displays capable of 3-D graphical output and millions of colors.

RCCS III

2006 – Present

The new RCCS III was written to operate on a Windows PC-based platform using C++ applications. The Graphical User Interfaces (GUIs) and output displays were built upon Commercial Off-The-Shelf (COTS) components, where available (tabular, graphical displays, etc.), with the ability to use the new Range Data Distribution System (RDDS) API for data ingestion. The new architecture supports a single-tiered implementation and can be run either as a team of PCs clustered to support multiple displays in a mission console, or as a stand-alone PC.